

KUKHTIN, V.A.
KAMAY, Gil'm; KUKHTIN, V.A.

Addition of phosphorus and phosphinous acid esters to conjugated systems. Part 4: Addition of phenylphosphinous acid esters to α, β -unsaturated aldehydes and acids. Zhur. ob. khim. 28 no. 4: 939-941 Ap '58. (MIRA 11:5)

1. Kazanskiy khimiko-tekhnologicheskii institut.
(Phosphinous acid) (Aldehydes) (Acids)

AUTHORS: Kukhtin, V. A., Gili'm Kamay

79-28-5-13/69

TITLE: Addition of the Full Esters of Phosphorous Acid and of Phosphinic Acid to Conjugated Systems (Prisoyedineniye polnykh estrov fosforistoy i fosfinovoy kislot k sopryazhennym sistemam).
V. On the Problem of the Conversion Mechanism of Trialkylphosphites with Conjugated Systems (V. K voprosu o mekhanizme vzaimodeystviya trialkilfosfitov s sopryazhennymi sistemami)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 5, pp. 1196-1200 (USSR)

ABSTRACT: In previous reports (refs 1,2) the authors described a new kind of regrouping by Artuzov, i.e. the action of the group C-C-C=O of conjugated systems on the esters of phosphorous acid and phosphinic acids. These reactions take place according to the general scheme 1. This scheme suggested by the authors demands a previous partial ionization of the reacting molecule of the conjugated system. In connection herewith it could be assumed that the solvents promoting ionization could accelerate the addition reaction of phosphites to the conjugated systems. The experiments on the reaction intensity

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Addition of the Full Esters of Phosphorous Acid and of 19-28-5-13/69
Phosphinic Acid to the Conjugated Systems.

V. On the Problem of the Conversion Mechanism of Trialkyl-
phosphites With Conjugated Systems

of the addition of tributylphosphite to metaacrylic acid in various solvents proved this assumption. Under the mentioned experimental conditions the results mentioned in table 1 could be obtained. The experimental data show that the stronger the polar solvent the more intensive the conversion reaction takes place; in this case the solvents, which have a high dielectric constant, accelerate the reaction, whereas the weakly polar solvents slow it down, as compared to the case of the reaction taking place without solvents. Thus the experimental results can serve as proof of the earlier suggested scheme. Just as well the reactions of trialkylphosphites with α,β -unsaturated acids and halogen alkyls were investigated, in which case the assumption by the authors that the phosphite in the first phase had to react predominantly with the α,β -unsaturated acid, and in the second phase, the halogen alkyl with the formed dipolar ion or the intermediate product according to scheme 2, was fully proved. There are 3 tables and 2 Soviet references.

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Addition of the Full Esters of Phosphorous Acid and of 79-38-5-13/69
Phosphinic Acid to the Conjugated Systems.
V. On the Problem of the Conversion Mechanism of Trialkyl-
phosphites With Conjugated Systems.

ASSOCIATION: Kazanskiy khimiko-tekhnologicheskii institut
(Kazan' Chemical-Technological Institute)

SUBMITTED: April 15, 1957

Card 3/3

AUTHORS: Kukhtin, V. A., Orekhova, K. M. . SOV/79-28-10-33/60

TITLE: Affiliation of the Complete Esters of Phosphorous Acid and of the Phosphinic Acid to the Conjugated Systems (Prisoedineniye polnykh efirov fosforistoy i fosfinistyykh kislot k sopryazhennym sistemam) VI. Joint Action of the Alkyl Halides and of the α, β -Unsaturated Acids on Trialkyl Phosphites (VI. Sovmestnoye deystviye galoidnykh alkilov i α, β -nepredel'nykh kislot na trialkilfosfity)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol 28, Nr 10, pp 2790 - 2797 (USSR)

ABSTRACT: In connection with the experience collected in earlier papers (Refs 1,2) the authors continued their investigations in the same direction by investigating the joint action of the α, β -unsaturated acids and alkyl bromides, as well as alkyl iodides on the trialkyl phosphites. The experiments with alkyl bromides fully proved the earlier proposed scheme, with the mixed β -dialkyl phosphonium carbonates and the corresponding alkyl halides being obtained (Table 1). The reaction of acrylic acid and alkyl bromide with the trialkyl

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phosphites takes place more energetically than that of methacrylic acid. In the reaction of ethyl bromide with the intermediate product which is obtained in the affiliation of tributyl phosphite to the methacrylic acid the butyl bromide and an ethyl ester of the β -dibutyl phosphono-isobutyric acid was separated (Reaction Scheme 1). The joint reaction of methacrylic acid and alkyl iodides with trialkyl phosphites offers only small yields of esters of the phosphono isobutyric acid (8-18%) (Table 2). The reaction takes place not only according to the above mentioned scheme. In driving off esters of the general formula $R'P(OR)_2$, methacrylate and dialkyl phosphorous

$\begin{array}{c} \parallel \\ O \end{array}$
acids were obtained (Table 2 and Scheme 2). Conclusion:
It is found that on the basis of the experimental results the joint reaction of methacrylic acid and alkyl iodides with the trialkyl phosphites can take place

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Affiliation of the Complete Esters of Phosphorous
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Action of the Alkyl Halides and of the α,β -Unsaturated Acids on Trialkyl
Phosphites

SOV/79-29-10-33/60

in three different directions according to the
conditions prevailing (last Scheme). There are 2 tables
and 3 references, 3 of which are Soviet.

ASSOCIATION: Kazanskiy khimiko-tekhnologicheskii institut imeni S.M.
Kirova i Kazanskiy filial nauchno-issledovatel'skogo
kinofoto instituta (Kazan' Chemotechnological Institute
imeni S.M.Kirov and Kazan' Branch of the Scientific Research
Institute of Cinematography and Photography)

SUBMITTED: September 17, 1957.

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KUKHTIN V. A.
AUTHORS:

Kukhtin, V. A., Kamay, Gil'm,
Sinchenko, L. A.

20-3-24/59

TITLE:

Telomerization of Metacrylic Acid With Trialkylphosphites
(Telomerizatsiya metakrilovoy kisloty s trialkilfosfitami).

PERIODICAL:

Doklady AN SSSR, 1958, Vol. 118, Nr 3, pp. 505-508 (USSR)

ABSTRACT:

The first two mentioned authors proved that (ref. 1) trialkylphosphites under the action α , β -unsaturated aldehydes and acids can be subjected to a regrouping according to Azbuzov. The authors continued research in this line and stated that on certain conditions not one but several molecules of metacrylic acid can be combined with one molecule of trialkylphosphite, so that reaction in this case becomes telomerization. The reaction takes place without catalyst and at room temperature; triethylphosphite must be carefully purified (with sodium) and must have been subjected to fractionated distillation. The amount of the telomer however, also in this case is very small. Therefore a suitable catalyst had to be found. Benzoylperoxide proved to be the best catalyst. Depending on the quantitative ratio between initial component and catalyst telomers of different mean

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molecular weight were formed. All telomers are white powders without significant melting point. They can be softened and carbonized when heated. When heated the telomers are soluble in methanol and acetic acid. The experimental results are collected in table 1. A diagram of the telomerization based on earlier works is given (ref. 1), although also another structure of the telomer is possible, it was not investigated here. In order to prove the diagram suggested an equimolar mixture of triethylphosphite and metacrylic acid was stored at room temperature until triethylphosphite had disappeared completely. In this an intermediate product of the regrouping according to Arbuzov which corresponds to the first stage of reaction was suggested. Only then a 4-fold excess of metacrylic acid plus catalyst was added. An intensive formation of telomers with a good yield set in immediately. This result proves: 1.- The formation of an intermediate product, and 2.- The probability of the telomerization mechanism suggested. Unexplained, however, remains the part of the catalyst as well as that of the mechanism of its influence on telomerization. With the increasing concentration of metacrylic acid the mean molecular

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weight of the telomer increases. This is also the case with the increasing concentration of benzoylperoxide. The capability of the intermediate product to enter telomerization makes possible the assumption that the binding P-O is of ion character. From this is deduced a presumable scheme of the structure of this intermediate product. There are 2 references, 1 of which is Slavic.

ASSOCIATION: Kazan' Chemical and Technological Institute imeni S.M. Kirov,
(Kazanskiy khimiko-tekhnologicheskii institut im.
S. M. Kirova).
Kazan' Br. of the Scientific Research Institute for Cinema and
Photography (Kazanskiy filial Nauchno-issledovatel'skogo
kinofotoinstituta).

PRESENTED: November 13, 1957, by B. A. Arbuzov, Academician
SUBMITTED: June 28, 1957
AVAILABLE: Library of Congress

Card 3/3

807/25-121-3-20/47

0001:

~~SECRET~~

0002:

Scientific Works of Academician R. A. Rabinovich (Academician Rabinovich
R. A. Rabinovich (Rabinovich))

0003:

Journal of Organic Chemistry, 1963, Vol. 18, No. 3, pp. 466-469
(1963)

0004:

In recent years research on the mentioned regrouping were
described (1-3). Continuing the investigations of the
reactions of α -conjugated systems with trialkyl phosphites
the author found that the latter are in interaction with di-
acetyl, dialkyl- α -(dimethyl-alkoxy-vinyl)-phosphate is formed
as final product (III). Scheme is mentioned (derived from
reactions analogous to those investigated in references 3-4).
The product (I) formed in connection with a nucleophilic
attack on a carbon atom by phosphorus is easily regrouped
to the product (II) under formation of a more stable binding
P=O (see 5). Table 1 shows the constants of the obtained
alkoxy vinyl phosphates. After a complete saponification these
substances result in phosphoric acid. In connection with a
carefully performed saponification with 2% HCl they form

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corresponding ketonophosphates (Table 1). The author succeeded in isolating an intermediate (I') in pure state by milder conditions of the addition reaction of trialkyl phosphites to diacetyl (20-30°C) in an ether solution by means of distillation. It reacts with water under considerable self-heating (up to 90-70°C) and thus forms ketonophosphate. In the case of heating and when left standing it definitely changes to alkox vinyl phosphate (III). If some drops of the product (II) are added to acrylic acid a strong telomerization takes place (see c). The cause for the high stability of trialkoxyphospho(dimethyl ethane)-trioxane (II) isolated by the author compared with the intermediates of the phosphite addition becomes clear as soon as their formulae are compared. The isolation of the mentioned intermediate in chemically pure state shows once more that the interaction of π -conjugate systems with ethers of the acids of 3-valent phosphorus represents a new type of Arbuzov's rearranging. It is true that no alkoxy phosphinic ether is formed but a phosphate; the process of reaction, however, is almost completely the same one. Arbuzov's rearranging is divided into 3 types. There are 1 table and 15 references, 12 of which are Soviet.

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Some New Types of Arbuzov's Regrouping

SOV/20-121-3-20/47

ASSOCIATION: Kazanskiy filial Vsesoyuznogo nauchno-issledovatel'skogo
kinofotoinstituta
(Lazan' Branch, All-Union Scientific Research Institute of
Cinematography and Photography)

PRESENTED: March 14, 1958, by B. A. Arbuzov, Member, Academy of Sciences,
USSR

SUBMITTED: March 11, 1958

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5(3)

AUTHORS: Kukhtin, V. A., Pudovik, A. M. (Kazan') SOV/74-28-1-5/5

TITLE: Several New Types of Arbuzov Rearrangements
(Nekotoryye novyye vidy peregruppirovki Arbuzova)

PERIODICAL: Uspekhi khimii, 1959, Vol 28, Nr 1, pp 96-116 (USSR)

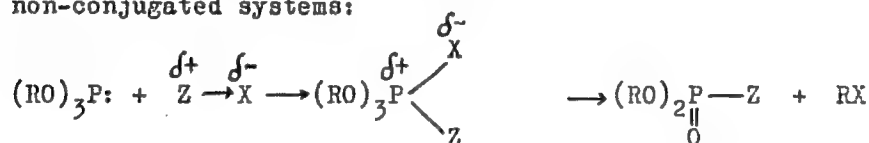
ABSTRACT: The reaction listed in the scientific publications as the rearrangement of Arbuzov was discovered in 1905 by A. Ye. Arbuzov. At present it represents one of the most important methods for synthesizing esters of phosphinic acids and their derivatives. The authors of this paper give a review of the most recent research work on this reaction and on broadening its application. In summary it may be said that the chemistry of trivalent phosphorous has entered a new phase of development. The basic type of Arbuzov rearrangement has been found to be characteristic of a whole new series of reactions of phosphites with various reagents. The current understanding of the Arbuzov reaction, which has been concerned only with the effect of alkyl halogens on the esters of trivalent phosphorous (Refs 86, 87), must be expanded on the basis of existent experimental material. The transformation of esters of trivalent phosphorous to derivatives of pentavalent

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Several New Types of Arbuzov Rearrangements

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phosphorous, which takes place using saturated as well as unsaturated electrophilic reagents with and without halogen atoms, should be considered a part of the Arbuzov rearrangement, since it is accompanied by the formation of a new P-El bond (El= C, N, O, S, and others). The nature of the rearrangement consists in the primary attack on the especially electrophilic part of the molecule by the nucleophilic phosphorous atom to form, usually, an intermediate form. This form then splits off the ester radical of the phosphite through the effect of the especially electronegative part of the associated reagent to form the endproduct, in which the P=O bond has formed. There are at least three basic types of Arbuzov rearrangements: 1. Rearrangement under the effect of non-conjugated systems:

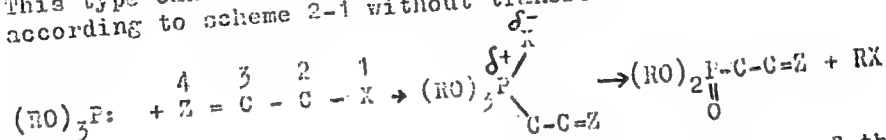


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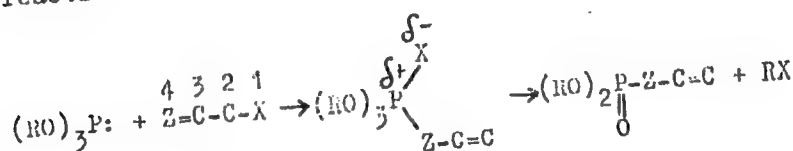
SOV/74-28-1-5/5

Several New Types of Arbuzov Rearrangements

2. Rearrangement under the effect of σ , π -conjugated systems. This type can occur in the following directions. a) Reaction according to scheme 2-1 without transfer of the reaction center:



b) Reaction according to scheme 4-1 or with transfer of the reaction center:

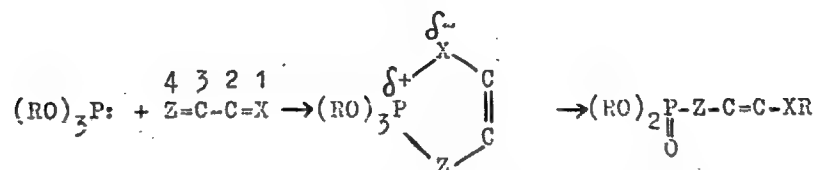


3. Rearrangement involving π , π -conjugated systems apparently occurs always by scheme 4-1 with transfer of the reaction center:

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These three basic types apparently cannot include all the various cases of this reaction. Complicated electron systems with a mixed conjugation (e.g. halogen acrylates, lactones, and several others) exhibit specific behavior in the reaction. Reagents which tend to form free radicals can be included in the Arbuzov rearrangement under certain conditions, according to the radical-chain mechanism, which differs from all the others mentioned above. Esters of trivalent phosphorous have not only the tendency to undergo the Arbuzov rearrangement, but they can also undergo numerous other reactions. Further research work on the rearrangement of Arbuzov promises to yield new and interesting results. There are 87 references, 57 of which are Soviet.

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USCOMM-DC-60841

AUTHORS: Kukhtin, V. A., Gil'm Kamay, SO7/79-29-2-32/71
Sinchenko, L. A., Orekhova, K. M.

TITLE: Affiliation of the Complete Esters of Phosphorous Acid and Phosphinic Acids to Conjugated Systems (Prisoyedineniye polnykh efirov fosforistoy i fosfinistyykh kislot k sopryazhennym sistemam). VII. Telomerization of the Methacrylic Acid With Trialkyl Phosphites (VII. Telomerizatsiya metakrilovoy kisloty s trialkilfosfitami)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 2, pp 510-515 (USSR)

ABSTRACT: In continuation of the common reaction of α, β -unsaturated acids and alkyl halides with trialkyl phosphites (Refs 1,2) the authors intended to find the catalyst most suitable for telomerization, to determine the factors which exercise influence upon this reaction and to determine the structure of the telomers obtained. They found that carefully purified triethyl phosphite can telomerize with methacrylic acid also without a catalyst. Temperature does not matter in this connection. The yield is small in this case (Table 1, Experiment 13). However, if a methacrylic acid is used for a while that is not stabilized with hydroquinone, the reaction takes place in

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a very violent manner under intense selfheating and with a high yield of telomers (Table 1, Experiment 12). The trialkyl phosphite that is purified only by separation through distillation does not telomerize with a methacrylic acid that was liberated from the inhibitor immediately before the experiment. It was interesting to know the way in which this telomerization would take place in the presence of triethyl amine and sodium methylate tested by R. M. Connel and H. W. Coover (Ref 3) as catalysts. Yet only small yields were offered by these experiments (Table 1, Experiments 1,2). Also the application of alkyl iodides for telomerization did not quite meet expectations. Benzoyl hydrogen peroxide turned out to be the most favourable catalyst for telomerization. In dependence of the molar ratio of the initial components, on the concentration of the catalyst and the phosphite radical telomers with various average molecular weights were obtained in this telomerization (Table 1). According to previous and the present results it may be assumed that the above-mentioned telomerization takes place according to the scheme mentioned in conclusion.

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Affiliation of the Complete Esters of Phosphorous SOV/79-29-2-32/71
Acid and Phosphinic Acids to Conjugated Systems. VII. Telomerization of the
Methacrylic Acid With Trialkyl Phosphites

Thus, the structure of telomers resulting from the telomerization of methacrylic acid with trialkyl phosphites was investigated and a scheme of reaction was suggested in addition. There are 2 tables and 3 references, 2 of which are Soviet.

ASSOCIATION: Kazanskiy khimiko-tekhnologicheskii institut (Kazan' Institute of Chemical Technology)

SUBMITTED: December 26, 1957

Card 3/3

S/058/60/000/007/002/014
A005/A001

Translation from: Referativnyy zhurnal, Fizika, 1960, No. 7, p. 37, # 16068

AUTHORS: Stepanov, V. G., Kukhtin, V. A.

TITLE: An Ionic Frequency Converter⁹⁵ for Feeding a Betatron¹⁹

PERIODICAL: Izv. Tomskogo politekhn. in-ta, 1959, Vol. 96, No. 1, pp. 119-129

TEXT: A series of circuits is proposed of ionic frequency converters for feeding a betatron, which do not comprise an inverter unit and make it possible to produce frequencies of 150, 300, 450 cps and more. The description is given and a detailed analysis is performed of two types of circuits of valve frequency converters. The first circuit makes it possible to obtain at the output one-phase voltage of tripled frequency; such a converter consists of two-three-phase controlled ionic rectifiers operating alternately with 120° electric lag angle. In the circuits of the second type, both half-periods of the transformer secondary winding are utilized. Such circuits can be applied to converters with the frequency ratio $f_2/f_1 = 3, 5, 7, 9$ etc. A comparison of the frequency conversion circuits is carried out. The calculation methods of the typical transformers and

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An Ionic Frequency Converter for Feeding a Betatron

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A005/A001

the conversion power coefficients are presented. The linear diagrams of the secondary transformer phase voltages and the voltages at the converter output are given. Results from experimental investigation are presented for a circuit built with thyratrons. The circuits proposed have lower cost, larger efficiency, higher simplicity, and reliability in comparison with circuits having an inverter unit. [Tomskiy politekhn. in-t.]

V. A. Kramchenko

Translator's note: This is the full translation of the original Russian abstract.

Card 2/2

5(2, 3)

AUTHORS:

Kukhtin, V. A., Orekhova, K. M.

SOV/20-124-4-25/67

TITLE:

Addition of Complete Esters of Phosphorous Acid to
p-Benzoquinone (Prisoedineniye polnykh efirov fosforistoy
kisloty k p-benzokhincnu)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 4, pp 819-821
(USSR)

ABSTRACT:

In previous papers the authors described some new reactions of the above-mentioned esters with various π -conjugated systems - the esters of α, β -unsaturated acids (Refs 1, 2) with α, β -unsaturated aldehydes (Ref 3) and diacetyl (Ref 4). These reactions take place according to Arbuzov's scheme of rearrangement (Refs 2, 4). In continuation of the study of the new kinds of that rearrangement this paper deals with the reaction of phosphites with quinones. The authors give a survey of the respective publications (Refs 5-8). They synthesized addition products of some trialkyl phosphites to p-benzoquinone. Their constants are given in table 1. The saponification of these substances in weakly acid medium yields hydroquinone as the main product. The saponification with alcoholic-aqueous alkalis takes place also on the separation of the phosphorus-containing

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Addition of Complete Esters of Phosphorous Acid to
p-Benzoquinone

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portion of the molecule. Yet these data do not confirm that the products mentioned possess a structure (IV) (see Scheme) since the bond P-Ar can be easily hydrolyzed if there is an oxy or amino group in the ortho-or para-position (Ref 9). Thus, the addition product of triphenyl phosphine to p-benzoquinone (I) on the formation of hydroquinone and triphenyl phosphine oxide is easily hydrolyzed (Refs 5, 6). For the purpose of checking the structure of the addition products mentioned the authors carried out a counter-synthesis of diethyl-p-ethoxy-phenyl phosphate, whereby a product was obtained that differs from the addition product of triethyl phosphite to p-benzoquinone as far as its constants are concerned (Table 1). In addition to that, a free hydroxyl group is lacking in it. Accordingly, it may be assumed that the phosphorus in the addition products mentioned conspicuously is not bound to nitrogen but to the aromatic ring. Like the addition products of triphenyl phosphine to p-benzoquinone, these products do not possess the structure (IV) but (VI). Unlike the trialkyl phosphites, triphenyl phosphite does not react with p-benzoquinone at room temperature. If heated for

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p-Benzquinone

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some time in benzene, a precipitation occurs. Only a certain amount of phenol could be distilled off from the liquid portion of the reaction product. It is an addition product of a triphenyl phosphite molecule to a benzoquinone molecule and presumably the product of the first stage of reaction with a structure (V). The second stage of rearrangement according to Arbuzov cannot be carried out separately since the reaction products are resinified. N. S. Garif'yanov recorded the spectra of paramagnetic resonance of several products. No formation of free radicals could be found in them. There are 1 table and 9 references, 4 of which are Soviet.

ASSOCIATION: Kazanskiy filial Vsesoyuznogo nauchno-issledovatel'skogo kinofotoinstituta (Kazan' Branch of the All-Union Scientific Cinema-Photography Research Institute)

PRESENTED: October 9, 1958, by B. A. Arbuzov, Academician

SUBMITTED: October 1, 1958
Card 3/3

66423

~~5(3)~~ 5.3630

AUTHORS: Kukhtin, V. A., Abramov, V. S., Orekhova, K. M. SOV/20-128-6-28/63

TITLE: Regrouping of the Esters of X-Oxy-alkyl Phosphinic Acids to Isomeric Phosphates

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 6, pp 1198 - 1200 (USSR)

ABSTRACT: The regrouping mentioned in the title (Refs 1,2) can - according to reference 5 - only take place if X is split off as an anion. Otherwise, a decomposition into aldehyde and dialkyl-phosphorous acids (Ref 6) must occur under the influence of alkalis. A similar regrouping producing isomeric phosphates is mentioned in reference 7 (see Diagram). The 2nd author made dialkyl-phosphorous acids directly act on diacetyl (Ref 8), and obtained esters of the α -oxy- β -aceto-ethyl-phosphinic acid (Table 1, Products A). Under different conditions, products with other constants were obtained. In a glass flask (instead of soldered-up ampullae), dialkyl phosphites with diacetyl yield the products B (Table 1) at a temperature above 100°. Table 2 shows the influence of experimental conditions on the course of reaction with the use of diethyl-phosphorous acid. A comparison of products A and B shows that A contains 8.16% of the hydroxyl group

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Regrouping of the Esters of X-Oxy-alkyl Phosphinic Acids to Isomeric Phosphates SOV/20-128-6-28/63

(according to Tserevitinov's method), Its infrared spectrum shows an intensive band at 3.290 cm^{-1} (Ref 9). Hence it seems to be certain that A is an ester of α -oxy- β -aceto-ethyl-phosphinic acid. The absorption at $3250\text{--}3300\text{ cm}^{-1}$ is missing in the infrared spectrum of B. On saponification with barium hydrate, it yields a barium salt of diethyl phosphate and, therefore, is a mixed diethyl- β -keto-2-butyl ester of the phosphoric acid. A diagram shows the interaction reaction of dialkyl-phosphorous acids with diacetyl yielding the isomeric products A or B depending on the conditions of execution. Sodium alcoholate accelerates this reaction and yields product B exclusively. The authors explain the regrouping under review in a way different from reference 5. An accompanying splitting-off of the haloid ion is not necessary. Thus, the authors detected a new interesting regrouping (as mentioned in the title) to isomeric mixed esters of the phosphoric acid. It takes place under the influence of sodium alcoholates in alcoholic solution, or due to the influence of dialkyl phosphites on diacetyl at $125\text{--}130^\circ$. The names of B. A. Arbuzov, V. S. Abramov and A. S. Kapustina are

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Regrouping of the Esters of X-Oxy-alkyl Phosphinic
Acids to Isomeric Phosphates

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SOV/20-128-6-28/63

also mentioned in the paper. There are 2 tables and 10 references, 5 of which are Soviet.

ASSOCIATION: Kazanskiy khimiko-tehnologicheskii institut im. S. M. Kirova
(Kazan' Institute of Chemical Technology imeni S. M. Kirov).
Kazanskiy filial nauchno-issledovatel'skogo kinofotoinstituta
(Kazan' Branch of the Scientific Research Institute of Cinematography and Photography)

PRESENTED: June 12, 1959, by B. A. Arbuzov, Academician

SUBMITTED: June 1, 1959

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S/079/60/030/04/34/080
B001/B016

AUTHORS: Kukhtin, V. A., Orekhova, K. M.

TITLE: Addition of Saturated Esters of Phosphorous and Phosphinic Acids to Conjugate Systems. IX. Addition of Trialkyl Phosphites to α -Diketones

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol. 30, No. 4, pp. 1208-1216

TEXT: The reaction of trialkyl phosphites with α -diketones may proceed according to two possible schemes (A and B), i.e. with or without shift of the reaction center (Scheme 1). A more thorough investigation showed, contrary to previous ones (Ref. 2), that the addition of trialkyl phosphites to α -diketones takes place on a carbonyl group, i.e. according to scheme A. The following facts indicate this: 1) The end product (II) ($R=C_2H_5$) is not esterified under any conditions with ethanol to give triethyl phosphate (comparison with the statement of Ref. 3). 2) Product (II) forms a barium salt of diethyl-phosphorous acid on saponification with barium hydroxide (comparison with the statement of

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Addition of Saturated Esters of Phosphorous
and Phosphinic Acids to Conjugate Systems.

S/079/50/030/04/34/080
B001/B016

IX. Addition of Trialkyl Phosphites to
 α -Diketones

Ref. 4). 3) According to the Raman effects of compounds (I) and (II), the latter show no vibrational frequencies of the double bond but are rather indicative of the carbonyl group. The intermediates (I)

($R' = CH_3; R = C_2H_5, C_3H_7, C_4H_9$) were separated in pure condition, and

characterized (comparison with the products of Ref. 1). Compound (I) reacts vigorously with water, and is transformed to (III). This takes place already at atmospheric moisture (Scheme 2). The effect of temperature, solvents, catalysts on the course of reaction of the second step (Arbuzov rearrangement) in the afore-mentioned reaction was investigated (Table 2). Organic acids react intensely with compound (I), and transform them to (III). The products (I) and (II) react with phenyl hydrazine in which connection diphenyl hydrazones are formed quantitatively.

Considering the structure of the intermediates obtained in the Arbuzov rearrangement, the structure of formula (A) (p. 1210) seems to be more probable than that of formula (B). The Raman spectra were taken by B. A. Arbuzov and V. S. Vinogradova. The authors mention a paper by

Card 2/3

Addition of Saturated Esters of Phosphorous
and Phosphinic Acids to Conjugate Systems.

IX. Addition of Trialkyl Phosphites to
 α -Diketones

S/079/60/030/04/34/080
E001/B016

V. S. Abramov, L. Sh. Belokon', and F. I. Makhmutova (Ref. 5). There
are 2 tables and 8 references, 6 of which are Soviet. ✓

ASSOCIATION: Kazanskiy filial nauchno-issledovatel'skogo kinofotoinstituta
(Kazan' Branch of the Motion Picture and Photography
Scientific Research Institute)

SUBMITTED: May 11, 1959

Card 3/3

S/079/60/030/05/26/074
B005/B126

AUTHORS: Kukhtin, V. A., Orekhova, K. M.

TITLE: The Addition of Neutral Esters of Phosphorous Acid and Full Esters of Phosphinic Acid to Conjugate Systems. X. The Reaction of Trialkylphosphites With π, π, π -Conjugate Systems

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol. 30, No. 5, pp. 1526-1529

TEXT: The authors examined the reaction of trialkylphosphites with trans- and cis-dibenzoylethylene and with vinylacrylic acid. Triethylphosphite reacts with trans-dibenzoylethylene in an ethereal solution at room temperature, forming a thick glycerine-like product which does not crystallize and cannot be distilled in a high vacuum without decomposition. This inter-product reacts with water, evolving heat, and it effects their polymerization when added to acrylates. When the reaction of triethylphosphite with trans-dibenzoylethylene is carried out under more rigorous conditions (heating to 120°), a product is obtained which, when vacuum distilled, gives triethylphosphate and considerable quantities of 2,5-diphenylfurane. Cis-dibenzoylethylene reacts with triethylphosphite

Card 1/3

The Addition of Neutral Esters of Phosphorous
Acid and Full Esters of Phosphinic Acid to
Conjugate Systems. X. The Reaction of Trialkyl-
phosphites With α, μ, π -Conjugate Systems

S/079/60/030/05/26/074
B005/B126

in exactly the same way as the trans-form. The action of water on the above intermediate of the addition of triethylphosphite to dibenzoyl-ethylethylene is to produce dibenzoylethane. That indicates that dibenzoylethylene behaves on the addition similarly to p-quinones. The above formation of 2,5-diphenylfurane is apparently due to the thermal decomposition of the intermediate of the addition. 2,5-diphenylfurane also forms by dehydration of dibenzoylethane, which is produced by the effect of dampness on the intermediate of the addition. Vinylacrylic acid reacts less vigorously with trialkylphosphites than acrylic- or methacrylic acid (Ref. 2). A small yield of phosphorvinylacrylesters results from the reaction of vinylacrylic acid with triethylphosphite; the main product of the reaction was a telomer, which was formed by the addition of some vinylacrylic acid molecules to the triethylphosphite. Only this telomer results from the reaction of tripropylphosphite with vinylacrylic acid. The authors explain these results thus: since the formation of a seven-membered ring is difficult, the intermediary dipolar ion does not stabilize itself on the ring-shaped intermediate but adds

Card 2/3

The Addition of Neutral Esters of Phosphorous
Acid and Full Esters of Phosphinic Acid to
Conjugate Systems. X. The Reaction of Trialkyl-
phosphites With π, π, π -Conjugate Systems

S/079/60/030/05/26/074
B005/B126

some more acid molecules, forming the above telomer. The inability of the vinylacrylic acid to form the ring-shaped intermediate, proves the covalent form of the intermediate. If the intermediate had ionic structure, it would also have to form in the case of vinylacrylic acid. All the experiments carried out are fully described in the experimental part. The Arbuzov Rearrangement is mentioned. There are 6 Soviet references. ✓

ASSOCIATION: Kazanskiy filial Nauchno-issledovatel'skogo kinofotoinstituta
(Kazan' Branch of the Scientific Research Institute for
Cinematography and Photography)

SUBMITTED: May 11, 1959

Card 3/3

S/001/62/000/004/062/087
B150/B138

AUTHORS: Khaykin, M. S., Derstuganov, G. V., Levkoyev, I. I., Kukhtin, V. A., Shamil'skaya, D. B.

TITLE: The developing properties of some 4-aminopyrazolones-(5) and their derivatives

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 4, 1962, 456, abstract 4L421 (Tr. Vses. n.-i. kinofotoinstituta, no. 37, 1960, 17-26)

TEXT: A synthesis is made of a series of derivatives of 4-aminopyrazolones-5, and their photographic properties are investigated. Some of these compounds, e.g. containing the methyl and free or substitution carboxyl group in position 3, are active developing substances. The introduction of the amino or oxy group into position 3 reduces the developing power. The introduction of substitutes into the phenol nucleus, which is in position 1 of the pyrazolone, has less influence on photographic properties. It is indicated that the photographic properties of 4-aminopyrazolones are connected with the electronic character of the substituting groups.

[Abstracter's note: Complete translation.]

Card 1/1

NEGOROSHKOVA, N.A.; LEVIN, Ya.A.; KUKHTIN, V.A.

Condensed heterocycles. Derivatives of 1-phenyl-[2,3-*a*]-pyrazolino-pyrimidine. Zhur. ob. khim. 31 no. 2:495-497 F '61.

(MIRA 14:2)

1. Kazanskiy filial nauchno-issledovatel'skogo kinofotoinstituta.
(Pyrimidine)

KUKHTIN, V.A.; GARIF'YANOV, N.S.; OREKHOVA, K.M.

Addition of complete ester of phosphorous and phosphinous acids to conjugated systems. Part II: Interaction between trialkyl phosphites and p -quinones. Zhur. ob. khim. 31 no.4:1157-1165 Ap '61. (MIRA 14:4)

1. Kazanskiy filial nauchno-issledovatel'skogo kinofotoinstituta.
(Phosphorous acid)
(Benzoquinone) (Naphthoquinone)

LEVIN, Ya.A.; KUKHTIN, V.A.

Some new types of the Arbuzov rearrangement. Part 12: Action of mercury acetate on trialkyl phosphites. Zhur.ob.khim. 31 no.5: 1552-1553 My '61. (MIRA 14:5)

1. Kazanskiy filial nauchno-issledovatel'skogo kinofotoinstituta.
(Phosphorous acid) (Mercury acetate)

LEVIN, Ya.A.; MOKHOVA, A.P.; KUKHTIN, V.A.

Synthesis of some derivatives of 4, 5, 6, 7-dibenz-1, 3-diaza-2, 4,
6-cycloheptatriene. Zhur.ob.khim. 31 no.5:1573-1576 M^y '61.
(MIRA 14:5)

1. Kazanskiy filial nauchno-issledovatel'skogo kinofotoinstituta.
(Cycloheptatriene)

KUKHTIN, V.A.; KAMAY, Gil'm.

Reactions of α, β -unsaturated acids with trialkyl phosphites. Zhur.
ob.khim. 31 no.5:1735-1736 My '61. (MIRA 14:5)
(Phosphorous acid) (Acids, Organic)

KUKHTIN, V.A.; KIRILLOVA, K.M.

Some new types of the Arbuzov rearrangement. Part 13: Interaction of trialkyl phosphites with o- and p-nitrobenzaldehydes. Zhur. ob.khim. 31 no.7:2226-2233 J1 '61. (MIRA 14:7)

1. Kazanskiy filial nauchno-issledovatel'skogo kinofotoinstituta.
(Phosphorous acid) (Benzaldehyde)

KUKHTIN, V.A.; KAZYMOV, A.V.; VOSKOBOYEVA, T.N.

Synthesis of phosphocyanine dyes. Dokl. AN SSSR 140 no.3:601-604
S '61. (MIRA 14:9)

1. Kazanskiy filial Vsesoyuznogo nauchno-issledovatel'skogo
kinofotoinstituta. Predstavleno akademikom B.A.Arbuzovym.
(Cyanines) (Dyes and dyeing)

KUKHTIN, V.A.; KIRILLOVA, K.M.

Thermal decomposition of the products of the addition of
trialkylphosphites to diacetyl. Dokl. AN SSSR 140 no.4:835-836
O '61. (MIRA 14:9)

1. Kazanskiy filial Vsesoyuznogo nauchno-issledovatel'skogo
kinofotoinstituta. Predstavleno akademikom A.Ye. Arbuzovym.
(Phosphorus organic compounds)

KUKHTIN, V.A., OREKHOVA, K.M.

"Some new forms of the Arbuzov μ rearrangement."

Khimiya i Primeneniye Fosfororganicheskikh Soedineniy (Chemistry and application of organophosphorus compounds) A. YE. ARBUZOV, Ed.
Publ. by Kazan Affil. Acad. Sci. USSR, Moscow 1962, 212 pp.

Collection of complete papers presented at the 1962 Kazan Conference on Chemistry of Organophosphorus Compounds.

KHAYKIN, M.B.; DERSTUGANOV, G.V.; LEVKOYEV, I.I.; KUKHTIN, V.A.; SHAMIL'SKAYA,
P.B.

Developing properties of some 4-amino-5-pyrazolones and their
derivatives. Trudy NIKFI no.46:5-16 '62.

(MIRA 18:8)

LEVIN, Ya.A.; KUKHTIN, V.A.; GOROKHOVSKIY, V.M.

Effect of structural factors on the stabilizing action of purines.
Zhur.nauch.i prikl.fot.i kin. 7 no.5:388-389 S-C '62.
(MIRA 15:11)

1. Filial Vsesoyuznogo nauchno-issledovatel'skogo kinofotoinstituta,
Kazan'.

(Photographic emulsions) (Purines)

KUKHTIN, V.A.; KIRILLOVA, K.M.; SHAGIDULLIN, R.R.

Structure of products of addition of trialkyl phosphites to
 α -diketones. Zhur.ob.khim, 32 no.2:649-650 F '62. (MIRA 15:2)

1. Kazanskiy filial nauchno-issledovatel'skogo kinofoto-
instituta.

(Phosphorous acid)
(Ketones)

LEVIN, Ya.A.; KUKHTIN, V.A.

2-Sulfo-4-hydroxy-6-méthylpyrimidine. Zhur.ob.khim. 32 no.5:
1709-1710 My '62. (MIRA 15:5)

1. Kazanskiy filial nauchno-issledovatel'skogo kinofotoinstituta.
(Pyrimidine)

KUKHTIN, V.A.; KIRILOVA, K.M.; SHAGIDULLIN, R.R.; SAMITOV, Yu.Yu.; LYAZINA,
N.A.; RAKOVA, N.F.

Some new types of the Arbuzov rearrangement. Part 14: Investigation
of the products of addition of trialkyl phosphites to diacetyl by
physical methods. Zhur.ob.khim. 32 no.6:2039-2046 Je '62.

(MIRA 15:6)

1. Kazanskiy filial nauchno-issledovatel'skogo kinofotoinstituta.
(Phosphorous acid) (Butanedione)

KUKHTIN, V.A.; VOSKOBOYEVA, T.N.; KIRILLOVA, K.M.

Some new types of the Arbuzov rearrangement. Part 15: Addition of trialkyl phosphites and diethyl phosphites to 1,2-cyclohexanedione. Zhur.ob.khim. 32 no.7:2333-2338 J1 '62. (MIRA 15:7)

1. Kazanskiy filial nauchno-issledovatel'skogo kinofotoinstituta.
(Rearrangements (Chemistry)) (Phosphorous acid)
(Cyclohexanedione)

KIRILLOVA, K.M.; KUKHTIN, V.A.

Some new types of the Arbuzov rearrangement. Part 16: Addition of trialkyl phosphites to 1,2-naphthoquinone. Zhur.ob.khim. 32 no.7:2338-2340 J1 '62. (MIRA 15:7)

1. Kazanskiy filial nauchno-issledovatel'skogo kinofotoinstituta.
(Rearrangements (Chemistry)) (Phosphorous acid)

KUKHTIN, V.A.; KIRILLOVA, K.M.

New types of the Arbuzov rearrangement. Part 17: Refractions of bonds and the atomic refractions of phosphorus and its pentavalent compounds. Zhur.ob.khim. 32 no.9:2797-2800 S '62. (MIRA 15:9)

1. Kazanskiy filial nauchno-issledovatel'skogo kinofotoinstituta.
(Phosphorus compounds) (Rearrangements (Chemistry))

LEVIN, Ya.A.; FEDOTOVA, A.P.; RAKOVA, N.F.; SAVICHEVA, G.A.; KUKHTIN, V.A.

Condensed heterocycles. Part 2: Condensation of 5-alky-3-amino-1-3-amino-1,2,4-triazoles with acetoacetic ester. Zhur.ob.khim. 33 no.4:1309-1314 Ap '63. (MIRA 16:5)

1. Kazanskiy filial Nauchno-issledovatel'skogo kinofotoinstituta.
(Triazole) (Acetoacetic acid)

LEVIN, Ya.A.; GUL'KINA, N.A.; KUKHTIN, V.A.

Condensed heterocycles. Part 3: Condensation of 3-amino-1,2,4-triazole with some β -ketocarboxylic esters. Zhur. ob. khim. 33 no.8:2673-2677 Ag. 1963. (MIRA 16:11)

1. Kazanskiy filial nauchno-issledovatel'skogo kinofotoinstituta.

LEVIN, Ya.A.; KUKHTIN, V.A.

Condensed heterocycles. Part 4: Condensation of 3-amino-1,2,4-triazoles with diaceto- and dipropionitriles. Zhur. ob. khim. 33 no.8:2678-2682 Ag '63. (MIRA 16:11)

1. Kazanskiy filial nauchno-issledovatel'skogo kinofotoinstitututa.

KHAYKIN, M.S.; PETROVA, N.L.; KUKHTIN, V.L.

Chlorination of dihydroxycoumarins. Zhur.ob.khim. 33 no.12:3941-
3943 D '63. (MIRA 17:3)

1. Kazanskiy filial Vsesoyuznogo nauchno-issledovatel'skogo kino-
fotoinstituta.

GOROKHOVSKIY, V.M.; KUKHTIN, V.A.; LEVIN, Ya.A.; BORIN, A.V.; KISELEVA, I.P.;
VARZANOSOVA, T.P.

Studying the stabilizing effect of some derivatives of 1,3,4 -
triazaindolizine. Trudy NIKFI no.46:26-30 '62.

(MIRA 18:8)

AKHMEZDYANOV, M.A.; SLESAREVA, V.I.; KHAYKIN, M.S.; KUKHTIN, V.A.; BORIN, A.V.

Effect of some antioxidants on the photographic properties and
keeping quality of emulsion layers. Trudy NIKFI no.46:31-35 '62.
(MIRA 18:8)

S/020/63/149/002/016/028
B108/B186

AUTHORS: Kirillova, K. M., Kukhtin, V. A., Sudakova, T. M.

TITLE: The addition of trialkyl phosphites to acetylene carboxylic acids

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 149, no. 2, 1963, 316 - 317

TEXT: The action of trialkyl phosphites on acetylene carboxylic acids which together form a $C\equiv C-C=O$ system was studied. Both propiolic and tetrolic acid form colorless liquids with trialkyl phosphites. An analysis of the infrared spectra of these compounds showed that they are esters of the corresponding acids. One distillation of the reaction products yields fractions with a wide boiling range, but after a second distillation the resulting products have a clear boiling point. It is possible that two isomeric forms result from the reactions, the less stable of which is converted into the other, more stable form on being heated (distillation). There is 1 table.

ASSOCIATION: Kazanskiy filial Nauchno-issledovatel'skogo kinofotoinstituta
(Kazan' Branch of the Scientific Research Institute of Motion
Card 1/2 Picture Photography)

The addition of trialkyl phosphites...

S/020/63/149/002/016/028
B108/B186

PRESENTED: October 26, 1962, by B. A. Arbuzov, Academician

SUBMITTED: October 16, 1962

Card 2/2

ACCESSION NR: AP4030364

S/0195/04/006/003/0473/0479

AUTHORS: Khismatullina, L. A.; Levi, S. M.; Kukhtin, V. A.

TITLE: Synthesis and investigation of graft copolymers of gelatin

SOURCE: Vyssokomolekulyarnyye soyedineniya, v. 6, no. 3, 1964, 473-479

TOPIC TAGS: protein, gelatin, acryl monomer, polymer, copolymer, graft copolymer, methylmethacrylate, polymethylmethacrylate, initiator of copolymerization, potassium persulfate

ABSTRACT: After reviewing the synthesis of graft copolymers of gelatin with various acrylic acid derivatives, the authors centered their attention on the copolymerization of gelatin with methylmethacrylate (MMA). To a flask, containing water kept at 86C, they added a 10% solution of gelatin and various amounts of potassium persulfate. To this they added various doses of monomers, and heated the mixture for 45 minutes. After cooling at room temperature and drying, the product was extracted with dichloroethane to obtain the homopolymethylmethacrylate. The residue was hydrolyzed with hydrochloric acid, and the grafted branch polymethylmethacrylate fraction was separated out. While experimenting with ratios of gelatin to MMA of 2:1, 1:1, 1:3, and 1:4, it was found that the amount of homopolymer

Card 1/2

ACCESSION NR: AP4030364

and of the grafted branch polymer fraction increased with higher MMA content in the original mixture. It was calculated that for each molecule of gelatin of a molecular weight of 60 000 there were 13-17 graft polymer branches of a molecular weight of 2700-2000. Experiments with concentrations of the initiator within the 0.75-9% range revealed that the firmness of the gel and the viscosity of the solution decreased with higher concentrations of potassium persulfate, while the quantity of homopolymeric MMA increased, and the molecular weight of the graft polymers diminished. A study of the physico-chemical and physico-mechanical properties of various graft copolymers of gelatin with monomers of the acryl series showed their superior mechanical strength, elasticity, and thermal stability, while the viscosity of their aqueous solutions, unlike that of gelatin, remained constant within a pH range of 2.5-10. Orig. art. has: 5 tables and 3 charts.

ASSOCIATION: Nauchno-issledovatel'skiy kinofotoinstitut (Scientific Research Institute of Cinematography)

SUBMITTED: 11Mar63

DATE ACQ: 07May64

ENCL: 00

SUB CODE: OC

NO REF SOV: 002

OTHER: 002

Card 2/2

LEVIN, Ya.A.; SERGEYEVA, E.M.; KUKHTIN, V.A.

Condensed heterocycles. Part 5: Interaction of 4-chloro-6-methyl-1,2,3-triazolo[2,3-*d*]pyrimidine with some nitrogen bases. Zhur.ob.khim. 34 no. 1:205-209 Ja '64. (MIRA 17:3)

1. Kazanskiy filial Nauchno-issledovatel'skogo kinofotoinstituta.

LEVIN, Ya.A.; FEDOTOVA, A.P.; KUKHTIN, V.A.

Condensed heterocycles. Part 6: Mechanism of the formation of the system 6-oxo-1,2,4-triazolo[2,3-]pyrimidine. Zhur.ob.khim. 34 no.2:499-501 F '64. (MIRA 17:3)

1. Institut organicheskoy khimii AN SSSR, Kazan'.

LEVIN, Ya.A.; KUKHTIN, V.A.

Condensed heterocycles. Part 7: Syntheses and transformations of some
4-substituted 6-methyl-1,2,4-triazolo[2,3-*a*]pyrimidines. Zhur.ob.khim.
34 no.2:502-508 F '64. (MIRA 17:3)

1. Institut organicheskoy khimii AN SSSR, g. Kazan'.

LEVIN, Ya.A.; PLATONOVA, R.N.; KUKHTIN, V.A.

Condensed heterocycles. Report No.8: Condensation of 3-amino-
1,2,4-triazole with cyanoacetic ester. Izv. AN SSSR. Ser. khim.
no.8:1475-1480 Ag '64. (MIRA 17:9)

1. Institut organicheskoy khimii AN SSSR, Kazan'.

LEVIN, Ya.A.; SHVINK, N.A.; KUKHTIN, V.A.

Condensed heterocycles. Report No.9; Condensation products of
ethoxymethylenemalonic ester with 2-aminothiadiazoles and
2-aminothiazoles. Izv. AN SSSR. Ser. khim. no.8:1481-1484
Ag '64. (MIRA 17:9)

1. Institut organicheskoy khimii AN SSSR, Kazan'.

KIRILLOVA, K.M.; KUKHTIN, V.A.

New types of Arbuzov's rearrangement. Part 18: Addition of trialkyl phosphites to methylphenylglyoxal. Zhur. ob. khim. 35 no.3:544-546 Mr '65. (MIRA 18:4)

1. Kazanskiy institut organicheskoy khimii AN SSSR.

KERILLOVA, K.M.; KUKHTIN, V.A.

New types of Arbuzov rearrangement. Part 19: Addition of trialkyl phosphites to acetylenecarboxylic acids. Zhur. ob. khim. 35
no.7:1146-1149 J1 '65. (MIRA 18:8)

1. Institut organicheskoy khimii AN SSSR, Kazan'.

KHAYKIN, M.S.; FEDORINA, L.G.; FAKHRUTDINOV, A.S.; KUKHTIN, V.A.

Synthesis of some derivatives of 7,8-dihydroxybenzopyrylium
chloride and 7,8-dihydroxycoumarin. Zhur.org.khim. 1 no.2:356-
358 F '65. (MIRA 18:4)

1. Kazanskiy filial Vsesoyuznogo nauchno-issledovatel'skogo
kinofotoinstituta.

KHAYKIN, M.S.; LEVKOVYEV, I.I.; KUKHTIN, V.A.

Synthesis of certain 3-methyl and 3-phenyl-4-amino-5-pyrazolinones.
Zhur. org. khim. 1 no.1:133-136 Ja '65. (MIRA 18:5)

1. Kazanskiy filial Vsesoyuznogo nauchno-issledovatel'skogo kinofoto-
instituta.

L 28876-66 ENP(j)/ENT(m) RM

SOURCE CODE: UR/0079/65/035/003/0544/0546

ACC NR: AP6018836

AUTHOR: Kirillova, K. M.; Lukatin, V. A.

ORG: Kazan Institute of Organic Chemistry, AN SSSR (Kazanskiy institut organicheskoy khimii AN SSSR)

TITLE: New types of Arbusov rearrangements. XVIII. Addition of trialkyl phosphites to methylphenylglyoxal

SOURCE: Zhurnal obshchey khimii, v. 35, no. 3, 1965, 544-546

TOPIC TAGS: phosphate, polymerization, organic phosphorus compound

ABSTRACT: The reaction of phosphites with a nonsymmetrical alpha-diketone: methyl-phenylglyoxal was studied. The corresponding 1,3,2-dioxaphospholene is always produced. Formation of the hydroxyketone is observed only in rare cases and in very low yield. The 1,3,2-dioxaphospholene derivatives: 2,2',2"-trialkoxo-4-methyl-5-phenyl-1,3,2-dioxaphospholenes were found to differ somewhat from previously described 1,3,2-dioxaphospholenes in their chemical properties. They react readily with water, and less actively with acetic acid, to form phosphates, and are active initiators of polymerization. Reaction with phenylhydrazine produces the alpha-phenylhydrazone of methylphenylglyoxal rather than a phenylosazone. Attempts at thermal conversion of a dioxaphospholene to a phosphinic ester were unsuccessful; a dioxaphospholene was produced by the action of diacetyl on the dioxaphospholene. Orig. art. has: 1 figure, 7 formulas, and 1 table. [JPRS]

SUB CODE: 07 / SUBM DATE: 03Nov63 / ORIG REF: 003 / OTH REF: 001

Card 1/1 UDC: 1547.241+547.442.2

L 33056-66 EWT(1)/T IJP(c)
ACC NR: AP6024071

SOURCE CODE: UR/0077/66/011/002/0081/0087

AUTHOR: Khismatullina, L. A.; Levi, S. M.; Bogdanov, L. M.; Kukhtin, V. A. 37
B

ORG: All-Union Scientific Research Motion Picture Institute (Vsesoyuznyy nauchno-
issledovatel'skiy kinofotoinstitut)

TITLE: Investigation of the application of grafted gelatin copolymers for photo-
graphic emulsions 20

SOURCE: Zhurnal nauchnoy i prikladnoy fotografii i kinematografii, v. 11, no. 2,
1966, 81-87

TOPIC TAGS: photographic emulsion, graft copolymer, photographic processing,
photographic property

ABSTRACT: Conditions are worked out for synthesis of grafted gelatin copolymers. As a result of physico-mechanical and photographic investigations of the grafted gelatin copolymers, introduced to the emulsion in quantities of 25-50%, it has been established that these materials have no negative effect on the photographic properties, but increase the elasticity, strength and heat stability of the emulsion layer, which makes the layer immune to separation during high-temperature photographic processing. Orig. art. has: 9 tables. [JPRS]

SUB CODE: 14, 07 / SUBM DATE: 15Sep64 / ORIG REF: 002 / OTH REF: 001

Card 1/1 (la)

UDC: 771.513
0918 66-321

VUKOLOV, V.I., inzh.; ~~KUKITIN, V.I.~~ inzh.; NESSEL', Ya.S., inzh.;
TOVKACHEV, V.G., inzh.; PAVLOV, V.I., master-elektrotekhnik.

"Mercury-converter substation of electrolysis plants" by K.G. Kazantsev. Reviewed by V.I. Vukolov and others. Vest.elektroprom.
29 no.10:74-76 O '58. (MIRA 11:11)

(Electric substations)

(Electric current rectifiers)

(Kazantsev, K.G.)

Исх. № 100-100
KUKHTINA, A.F.

Effect of sodium bromide on the copper content of the brain [with
summary in English]. Ukr.biokhim. zhur. 29 no.3:285-291 '57.

(MLRA 10:9)

1. Kafedra biologii i kafedra biokhimii Meditsinskogo instituta
g. Stalino.

(BRAIN) (COPPER IN THE BODY)

(BROMINE--PHYSIOLOGICAL EFFECT)

SHUTOVA, N.N.; KUKHTINA, A.V.

Parasites and predators of quarantine and certain other pests of
farm crops. Ent.oboz. 34:210-217 '55. (MLRA 9:5)

1. Otdel entomologii Tsentral'noy laboratorii po karantinu
sel'skokhozyaystvennykh rasteniy Ministerstva sel'skogo khozyaystva
SSSR, Moskva.

(Insects, Injurious and beneficial)

ACC NR: AP6019616 (A,N) SOURCE CODE: UR/0048/66/030/002/0255/0256
 AUTHOR: Gridnev, K.A.; Krasnov, L.V.; Kukhtina, I.N.; Luk'yanov, V.K.; Nikitina, V.I.;
 Furman, V.I.

ORG: none

TITLE: Calculation of direct nuclear reactions by the distorted wave method/Report
 Fifteenth Annual Conference on Nuclear Spectroscopy and Nuclear Structures, held at
 Minsk, 25 January to 2 February 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 2, 1966, 255-256

TOPIC TAGS: nuclear reaction, mathematic method, direct nuclear reaction, nuclear
~~stripping reaction, distorted wave approximation~~ wave analyzer

ABSTRACT: The authors have employed an electronic computer to calculate differential
 cross sections for (d,p) reactions in the distorted wave approximation under the
 following simplifying assumptions: 1) the range of the nuclear forces is zero (the
 interaction potential is a delta-function) and 2) there is no spin-orbital coupling.
 The calculated angular distribution of protons from the ^{56}Fe (d,p) ^{57}Fe reaction with
 an incident deuteron energy of 6.6 MeV is compared with the angular distribution
 calculated in the plane wave approximation (Butler's theory) and with experimental
 data of V.P. Bochkin, K.I. Zhorebtsova, V.S. Zolotarev, V.A. Komarov, L.V. Krasnov,

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ACC NR: AP6019616

V.F.Litvin, Yu.A.Nemilov, and B.G.Novatskiy (Vestn. Leningr.un-ta, No.22 78 (1963)).
The experimental data are in much better agreement with the distorted wave calculations than with the plane wave calculations. The authors intend to publish a detailed description of their calculations and expect to relax the simplifying assumptions 1) and 2) in future work. Orig. art. has: 2 formulas and 1 figure.

SUB CODE: 20

SUBM DATE: 00

ORIG. REF: 001

OTH REF: 002

Card 2/2 *CC*

KUKHTINA, Zh.M. (Moskva, Leninskiy prospekt, 72, kv. 593)

Comparative anatomical characteristics of subcortical structures
of the optical and auditory analyzers in guinea pigs and squirrels.
Ark. anat. gist. i embr. 39 no.8:65-75 Ag '60. (MIRA 13:11)

1. Kafedra anatomii i fiziologii cheloveka i zhivotnykh (zav. --
prof. M.M.Kurepina) Moskovskogo gosudarstvennogo pedagogicheskogo
instituta imeni Potemkina.
(BRAIN) (RODENTS)

KUKHTINA, Zh.M.

Comparative morphology of the eyes of some rodents. Uch. zap.
MGPI 169:259-270 '62.

Comparative morphology of the cochlear apparatus of the ear of
some rodents. Ibid.:271-278 '62. (MIRA 17:5)

KLOSOVSKIY, B.N.; KUKHTINA, Zh.M. (Moskva)

Localization of the ganglion cells in the retina of the eye,
transmitting impulses to the external geniculate bodies or to
the anterior tubera of the corpora quadrigemina. Vop.neirokhir,
25 no.1:21-26 '62. (MIRA 15:1)

1. Laboratoriya patofiziologii mozga Instituta ~~nevrologii~~ AMN SSSR.
(RETINA—INNERVATION) (OPTIC NERVE) (BRAIN)

VELIKORETSKIY, D.A.; LORIYE, K.M.; FINKEL', I.I.; GRIGORCHUK, Yu.F.;
 BERGER, L.Kh.; UTROBINA, V.V.; KHARCHENKO, V.P.; MESHCHERYKOV, A.V.,
 student V kursa; OBEREMCHENKO, Ya.V., kand.med.nauk; NIKITIN, A.V.;
 MUKHOYEDOVA, S.N.; KUSMARTSEVA, L.V., assistant; KUZNETSOV, V.A.,
 dotsent; KUKHTINOVA, R.A., assistant; BONDARENKO, Ya.D. (g. Fastov);
 KURTASOVA, L.V. (g. Fastov); PEVCHIKH, V.V.; CHURAKOVA, A.Ye.;
 BABICH, M.M.; KUZ'MIN, K.F.; PAVLOV, S.S.; SHEVLYAKOV, L.V., kand.
 med.nauk; IGNAT'YEVA, O.M.; ZEYGERMAKHER, G.A.; GUTKIN, A.A.;
 POLYKOVSKIY, T.S.

Resumes. Sov.med. 25 no.11:147-152 N '61.

(MIRA 15:5)

1. Iz Instituta grudnoy khirurgii AMN SSSR (for Velikoretskiy, Loriye, Finkel').
2. Iz bol'nitsy No.3 Gorlovki Stalinskoy oblasti (for Grigorchuk).
3. Iz Tyumenskoy oblastnoy bol'nitsy (for Berger, Utrobina).
4. Iz Karatasskoy rayonnoy bol'nitsy Yuzhno-Kazakhstanskoy oblasti (for Kharchenko).
5. Iz Gospital'noy khirurgicheskoy kliniki I Moskovskogo ordena Lenina meditsinskogo instituta imeni Sechenova (for Meshcheryakov).
6. Iz kliniki propedevticheskoy terapii Stalinskogo meditsinskogo instituta na baze oblastnoy klinicheskoy bol'nitsy imeni Kalinina (for Oberemchenko).
7. Iz kliniki gospital'noy terapii Voronezhskogo meditsinskogo instituta (for Nikitin, Mukhoyedova).
8. Iz kafedry obshchey khirurgii Kishinovskogo meditsinskogo instituta (for Kusmartseva).

(Continued on next card)

VELIKORETSKIY, D.A.---(continued) Card 2.

9. Iz akushersko-ginekologicheskoy kliniki Stalinskogo meditsinskogo instituta na baze bol'nitsy imeni Kalinina (for Kuznetsov, Kukhtinova).
10. Iz gosptal'noy terapevticheskoy kliniki Izhevskogo meditsinskogo instituta (for Pavchikh, Churakova). 11. Iz Nosovskoy rayonnoy bol'nitsy Chernigovskoy oblasti (for Babich). 12. Iz Vyborskoy mezhrayonnoy bol'nitsy (for Pavlov). 13. Iz 1-y gorodskoy bol'nitsy Tyumeni (for Ignat'yeva). 14. Iz 2-y infektsionnoy bol'nitsy g. Zaporozh'ya (for Zeygermakher). 15. Iz infektsionnogo i prozektorskogo otdeleniy Petrozavodskoy gorodskoy bol'nitsy (for Gutkin, Polykovskiy).

(MEDICINE--ABSTRACTS)

KUZNETSOV, V.A., dotsent; KUKHTINOVA, R.A., assistant; SOROKA, P.G., assistant.

Extensive congenital skin defects in newborn infants. Akush. i gin. 39 no.4:134-135 J1-Ag'63. (MIRA 16:12)

1. Iz akushersko-ginekologicheskoy kliniki No.1 (zav. - prof. P.P. Sidorov) Donetskogo meditsinskogo instituta imeni A.M. Gor'kogo.

ROZHKOV, I.S.; GRINBERG, G.A.; KUKHTINSKIY, G.G.-----

Some characteristics of the geology and metallogeny of the upper
Indigirka Valley. Geol. i geofiz. no.11:3-13 '61. (MIRA 15:2)

1. Yakutskiy filial Sibirskogo otdeleniya AN SSSR.
(Indigirka Valley--Gold ores)

KUKHTIY, F.; VINOKUROV, A., mekhanik; KORSUNSKIY, V.

Renovation of the KM-1400 trench digger. Prom.stroi.i inzh.
soor. 4 no.5154 S-C '62. (MIRA 16:1)

1. Nachal'nik proizvodstvenno-tekhnicheskogo otdeleniya
Nikopol'skogo gidrostroya (for Kukhtiy). 2. Starshiy
proizvoditel' rabot proizvodstvenno-tekhnicheskogo otdeleniya
Nikopol'skogo gidrostroya (for Korsunskiy).
(Excavating machinery)

KUKHTO, A.F.

"Antagonism" of the causative agents of nuttalliosis and infectious anemia of horses. Trudy Inst.zool. AN Kazakh.SSR 1:205-210 '53.

(MIRA 10:1)

(Infectious anemia of horses) (Blood--Parasites)
(Protozoa, Pathogenic) (Horses--Diseases and pests)

KUKHTO, A. F., kandidat biologicheskikh nauk.

Toxoplasmosis, Veterinariia 33 no.11:86-90 N '56. (MLRA 9:11)
(Toxoplasmosis)

14 FEB 1957
ORLOV, F.M., dotsent, kandidat veterinarnykh nauk; METELKIN, A.I., professor,
doktor biologicheskikh nauk, redaktor; ~~KUKHTO, A.F., redaktor;~~
BORISOVICH, F.K., redaktor; SOKOLOVA, N.N., tekhnicheskii redaktor

[Laboratory methods in veterinary research] Laboratornye metody
issledovaniia v veterinarii. Moskva, Gos. izd-vo sel'khoz. lit-ry.
Vol.4. 1957. 511 p. (MLRA 10:7)
(Veterinary research)

KUKHTO, A.F.

KUKHTO, A.F., kandidat biologicheskikh nauk.

Vesicular exanthem in swine. Veterinariia 34 no.8:87-90 Ag '57.
(Exanthemata) (Swine--Diseases and pests) (MLRA 10:9)

KUKHTO, A. P., (Candidate of Biological Sciences)

Pruritis of sheep (scrapie)

Veterinariya vol. 38, no. 7, July 1961 p. 85.

KUKHTO, A.F., kand. biol. nauk; SVINTSOVA, A.P.

Veterinary medicine abroad. Veterinariia 38 no.7:85-89
Jl '61. (MIRA 16:8)

(Scrapie) (Abortion in animals)

KUKHTO, AP. E.

✓ Kukhto, A. P. *Voprosy otклонeniya fakticheskogo vetra ot geostroficheskogo.* [Problem of the deviation of the actual wind from the geostrophic.] *Meteorologiya i Gidrologiya*, Leningrad, No. 2:19-21, Feb. 1956, table, 8 refs. DWB, DEC—The author investigated the correspondence of the actual and geostrophic (i.e., excluding curvature) wind velocity in different geographic regions using charts with absolute surface topography of 850, 700 and 500 mb for July 1954 and Feb. 1954, and morning pilot balloon observations. Geostrophic wind was calculated by means of Pogonin's rule and the results for Eniden, Moscow, Brest, Murmansk, etc. are given in a table. The deviations of actual from geostrophic wind velocity are independent of season. At 850 and 700 mb the actual velocity exceeds the geostrophic; at 500 mb the reverse is true. The actual wind velocity on the average exceeds by 10-15% the geostrophic velocity. *Subject Heading:* 1. Geostrophic winds.—I.L.D.

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BAGROV, N.A.; KUKHTO, A.P..

Variability of mean monthly temperatures and altitudes of the
500 millibar isobaric surface. Sbor. rab. po sinop. no.3:139-152
'59. (MIRA 12:11)

1. Tsentral'nyy institut prognozov.
(Atmospheric temperature) (Atmospheric pressure)

0045

3.5000

S/050/60/000/012/003/005
B012/B054

AUTHOR: Kukhto, A. P.

TITLE: Thermal Structure of Poorly Mobile Anticyclones

PERIODICAL: Meteorologiya i gidrologiya, 1960, No. 12, pp. 19 - 22

TEXT: Anticyclones shifting at an average rate of at most 15 km/h and at most 1,000 km from their original position within 5-7 days (Refs. 1,4,9) are called poorly motile (quasisteady). The present paper describes an analysis of 10 typical, high, poorly mobile anticyclones which were in a steady state for at least 3 days (Ref.7). Isothermal charts on the 850, 700, 500, 300, and 200 mb levels were plotted for the analysis of the thermal field of anticyclones. Three types of thermal fields were found for each level on the basis of a joint analysis of the position of high anticyclones and that of the thermal field at different altitudes: 1) T group: the high anticyclones are situated in the heat source or heat crest; 2) X group: the high anticyclones are situated in the cold source or in the heat trough; 3) T/X group: a combination of the former two groups. Tables 2 and 3 give the results of investigation

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Thermal Structure of Poorly Mobile Anticyclones S/050/60/000/012/003/005
B012/B054

of thermal fields, separately for the period of steady state and that of the mobile state. The numerator indicates the number of days, the denominator the percentage. Tables 4 and 5 show the mean temperature changes Δt and the altitude changes ΔH of the isobaric surface of the anticyclones investigated from one day to another, as well as the corresponding changes $\Delta t'$ and $\Delta H'$ in the area where the anticyclones are situated afterwards. An investigation of the eddy showed that the eddy values varied within relatively wide limits on the 700 and 500 mb levels. The extreme eddy values in the steady state of anticyclones, however, were equal on both levels. This was not observed in mobile anticyclones. As to the Laplacian values, no essential difference was observed for the various states of anticyclones. A paper by S. P. Khromov is mentioned. There are 5 tables and 9 Soviet references. ✓

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S/050/60/000/012/003/005
B012, 2054

1) Вид тер-мичес-кого поля

2) Изобарические поверхности (мб)

	850	700	500	300	200
T	33 80.5	39 95.2	37 90.2	25 62.5	1 3.3
X	2 4.9	—	—	3 7.5	20 66.7
T/X	6 14.6	2 4.8	4 9.8	12 30	9 30
3) Всего	41 100	41 100	41 100	40 100	30 100

Legend to Table 2: Character of the thermal field above anti-cyclones in the steady state:
1) Type of thermal field, 2) iso-baric surface (mb), 3) total.

4) Вид тер-мичес-кого поля

5) Изобарические поверхности (мб)

	850	700	500	300	200
T	23 69.8	28 84.8	25 75.8	21 67.7	2 8.7
X	—	2 6.1	1 3.0	2 6.4	15 55.2
T/X	10 30.2	3 9.1	7 21.2	8 25.9	6 26.1
Card 3/4 3) Всего	33 100	33 100	33 100	31 100	23 100

Legend to Table 3: Character of the thermal field above anti-cyclones in the mobile state:
1) Type of thermal field, 2) iso-baric surfaces (mb), 3) total.

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S/050/60/000/012/003/005
B012/B054

Изменение температуры и высоты
изобарических поверхностей анти-
циклонов в стадии стационарирования

Изобарическая поверхность (мб)	Δt	ΔH	$\Delta t'$	$\Delta H'$
850	+0,19	-0,28	+0,91	+1,07
700	-0,12	-0,18	+0,61	+1,67
500	-0,12	-0,26	+0,73	+2,49
300	+0,13	-0,63	+1,17	+3,79
200	-0,43	+2,12	+3,40	+6,34

Таблица 4

Изменение температуры и высоты
изобарических поверхностей анти-
циклонов в стадии подвижности

Изобарическая поверхность (мб)	Δt	ΔH	$\Delta t'$	$\Delta H'$
850	-0,32	-0,45	+0,24	+1,72
700	-0,16	-0,17	+0,80	+2,26
500	+0,19	-1,05	+1,39	+2,18
300	+0,09	-0,29	+1,50	+3,12
200	-1,0	-3,14	+2,24	+3,57

Legend to Table 4: Changes in
temperature and altitude of
isobaric surfaces in anticyclones
in the steady state: 1) isobaric
surface (mb).

Legend to Table 5: Changes in
temperature and altitude of
isobaric surfaces in anti-
cyclones in the mobile state:
1) isobaric surfaces (mb).

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BAGROV, N.A.; KUKHTO, A.P.

Determining the Laplacian field from the
Meteor. 1 gidrol. no.4:23-27 Ap '61.
(Meteorology)

geopotential.
(MIRA 14:3)

ACC NR: AT6033366

(N)

SOURCE CODE: UR/3118/66/000/009/0029/0042

AUTHOR: Kukhto, A. P.

ORG: none

TITLE: On the circulation of the atmosphere over the Atlantic European region during a period of several years

SOURCE: Mirovoy meteorologicheskii tsentr. Trudy, no. 9, 1966. Statisticheskiye svoystva meteorologicheskikh poley (Statistical properties of meteorological fields), 29-42

TOPIC TAGS: synoptic meteorology, long range weather forecasting, atmospheric circulation

ABSTRACT: The H_{500} field of natural synoptic periods has been analyzed by Chebyshev's orthogonal polynomial for the 25 year period of 1938--1962. The trend of individual components of the field was studied and the recurrence of coefficients was shown to approach Gaussian distributions. The characteristic variability of components from period to period and seasonal and annual variations of selected coefficients were computed and tabulated. The results were compared and found in good agreement with indexes published by other researchers. Field coefficients with high variability have satisfactory synchronous correspondence with anomalies of air temperature and to a lesser degree with river flow. Probably, similar correlations of coefficients with hydrometeorological parameters could be established also at shifts in
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